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कृत्रिम सिरप — विशिष्टि  
( पहला पुनरीक्षण )

**Synthetic Syrups — Specification**  
( First Revision )

ICS 67.180.20

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## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fruits, Vegetables and Allied Products Sectional Committee had been approved by the Food and Agriculture Division Council.

Synthetic syrups occupy an important place among the beverages manufactured in the country. It is, however, necessary to ensure the quality of the products if the demand is to be maintained and further developed. It is, therefore, necessary to have strict quality control based on specifications.

This standard was first published in 1968 and was amended in May 1996, to introduce scheme for labelling environment friendly products to be known as ECO-Mark at the instance of the Ministry of Environment and Forests (MoEF).

The first revision is being carried out to harmonize the standard with *Food Safety and Standards Act, 2006* and Regulations framed thereunder.

In this revision the following major changes have been made:

- a) Use of food additives as per *Food Safety and Standards (Food Product Standards and Food Additives) Regulations, 2011* has been permitted; and
- b) The limits of metallic contaminants has been modified as per *Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011*.

In the preparation of this standard, due consideration has been given to the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011* and *Legal Metrology (Packaged Commodities) Rules, 2011*. However, this standard is subject to restrictions imposed under these rules, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## Indian Standard

## SYNTHETIC SYRUPS — SPECIFICATION

( First Revision )

## 1 SCOPE

This standard prescribes requirements and methods of sampling and test for synthetic syrups.

## 2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

<i>IS No.</i>	<i>Title</i>
2860 : 1964	Methods of sampling and test for processed fruits and vegetables
3500 : 1966	Specification for mango chutney
4624 : 1978	Specification for dehydrated peas ( <i>first revision</i> )
5403 : 1999	Method for yeast and mould count of foodstuffs and animal feeds ( <i>first revision</i> )
ISO 5521 : 1981	Fruits, vegetables and derived products — Qualitative method for the detection of sulphur dioxide
5781 : 1993	Fruit and vegetable products — Determination of dry matter content by drying under reduced pressure and of water content by azeotropic distillation ( <i>first revision</i> )
5887 (Part 5) : 1976	Methods for detection of bacteria responsible for food poisoning: Part 5 Isolation, identification and enumeration of <i>Vibrio cholerae</i> and <i>Vibrio parahaemolyticus</i> ( <i>first revision</i> )
12014 (Part 1) : 1986	Methods for determination of organic preservatives in foodstuffs: Part 1 Benzoic acid and its salts
13815 : 2010	Fruit and vegetable products — Determination of soluble solids content — Refractometric method ( <i>first revision</i> )

## 3 TERMINOLOGY

For the purpose of this standard, the following definition shall apply.

**3.1 Synthetic Syrup** — It means the syrup obtained by blending syrup made from sugar, dextrose or liquid glucose. It may also contain fruit juice and other ingredients appropriate to the product. It shall be free from burnt or objectionable taints, flavours, artificial sweetening agents, extraneous matter and crystallization. It may contain citric acid, permitted colours, permitted preservatives and permitted flavouring agents.

**3.2 Absence of Defects** — Freedom from extraneous matter like grit, dirt, crystallized sugar, and an oily layer at the surface.

## 4 REQUIREMENTS

## 4.1 Preparation

Synthetic syrups shall be prepared from sucrose, invert sugar, dextrose, liquid glucose, water, herbs, dry fruits, flower petals and essences. In the preparation of synthetic syrups artificial sweetening agents shall not be used.

## 4.2 Additives

It may contain citric acid, permitted colours, permitted preservatives and permitted flavouring agents.

## 4.3 Preservatives

Preservatives that may be used in synthetic syrups are sulphur dioxide or any other suitable sulphite or benzoic acid or its water soluble salts. The sulphur dioxide (SO<sub>2</sub>) content shall not exceed 350 parts per million when tested according to the method prescribed ISO 5521. Benzoic acid content shall not exceed 600 parts per million when tested according to the method prescribed in IS 12014 (Part 1).

## 4.4 Requirements of the Finished Product

**4.4.1** The total soluble solids content in synthetic syrups shall be not less than 65 percent by weight when tested according to the method prescribed in IS 13815.

**4.4.2** Synthetic syrups shall be clear, transparent, free from scum, residue or suspended particles, shall be of a uniform colour, shall possess a pleasant taste and

flavour truly characteristic of the flavouring material used and shall score not less than 80 points. There shall be no crystallization of sugar. Maximum and minimum number of points scored by different factors shall be as follows:

<i>Factor</i>	<i>Maximum</i>	<i>Minimum</i>
Colour	25	20
Taste and flavour	50	40
Absence of defects	25	20

Scoring shall be done according to the method prescribed in Annex A.

**4.4.3** Synthetic syrups shall not contain metallic contaminants in excess of quantities specified in Table 1.

#### 4.5 Additional Requirements for Eco-Mark

##### 4.5.1 General Requirements

**4.5.1.1** The product shall conform to the requirements prescribed under 4.1 to 4.4.

**4.5.1.2** The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the norms laid down under the *Water (Prevention and Control of Pollution) Act, 1974*; *Air (Prevention and Control of Pollution) Act, 1981*; *Water (Prevention and Control of Pollution) Cess Act, 1977* respectively, along with the authorization, if required, under the *Environment (Protection) Act, 1986*, while applying for Eco-Mark.

**4.5.1.3** The product/packaging may also display in brief the criteria based on which the product has been labeled environment friendly.

**4.5.1.4** The material used for product/packing shall be recyclable or biodegradable.

**4.5.1.5** The date of manufacture and date of expiry shall be declared on the product/package by the manufacturer.

**4.5.1.6** The product shall be microbiologically safe when tested as per IS 5403 and IS 5887 (Part 5), and shall be free from bacterial and fungal toxins.

**4.5.1.7** The product/package or leaflet accompanying it may display instructions of proper use, storage and transport (including refrigeration temperature compliance) so as to maximize the product performance, safety and minimize wastage.

## 5 PACKING AND MARKING

### 5.1 Packing

Synthetic syrups shall be packed in suitable containers/bottles.

### 5.2 Marking

**5.2.1** Each container/bottle shall be marked or labelled with the following particulars:

- Name of the material with the brand name, if any (*see Note*);
- Name and address of the manufacturer;
- Net weight of the contents in grams;
- Date of manufacture or code number indicating the date of manufacture;
- Date of expiry;
- List of additives, if used;
- Manufacturer's licence number; and
- Any other requirement as stipulated under *Food Safety and Standards Act, 2006* and regulations framed thereunder and *Legal Metrology (Packaged Commodities) Rules, 2011*.

NOTE — The container of synthetic syrups shall not bear any label which may lead the consumer into believing that it is genuine fruit product. In addition the label shall have the word 'SYNTHETIC' distinctly and clearly displayed on it. Rose, KHUS, KEWRA, SANDAL and other such syrups may not be declared as 'SYNTHETIC' but shall not bear picture of fruits on the label.

**Table 1**  
( Clause 4.4.3 )

**Limits for Metallic Contaminants in Synthetic Syrups**

SI No.	Characteristic	Requirement	Method of Test, Ref to Clause No. of IS 2860
(1)	(2)	(3)	(4)
(i)	Arsenic (as As), mg/kg, <i>Max</i>	1.1	13 of IS 2860
(ii)	Lead (as Pb), mg/kg, <i>Max</i>	2.5	14 of IS 2860
(iii)	Copper (as Cu), mg/kg, <i>Max</i>	30	15 of IS 2860
(iv)	Zinc (as Zn), mg/kg, <i>Max</i>	50.0	16 of IS 2860
(v)	Tin (as Sn), mg/kg, <i>Max</i>	250	17 of IS 2860

**5.2.2 BIS Certification Marking**

The product may also be marked with the Standard Mark.

**5.2.2.1** The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 2016* and the Rules and Regulations made thereunder. The details of the conditions under which the licence for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards

**5.3 Eco-Mark**

The product may also be marked with the Eco-Mark, the details of which may be obtained from the Bureau of Indian Standards.

**6 SAMPLING**

The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in of IS 2860.

**7 TESTS**

Tests shall be carried out as prescribed in relevant clauses specified in Table 1.

## ANNEX A

( Clause 4.4.2 )

## METHOD OF SCORING FOR SYNTHETIC SYRUPS

## A-1 APPARATUS

**A-1.1 White Porcelain Bowls** — Of appropriate size to hold the contents of the container/bottle under examination.

## A-1.2 Stainless Steel Spoons

## A-2 PROCEDURE

## A-2.1 Panel of Judges

For awarding scores to synthetic syrups they shall be judged by a panel of 3 to 5 judges. All the judges constituting a panel shall be conversant with the factors governing the quality of the product. The containers shall be opened and contents poured separately into white porcelain bowls. Each judge shall independently examine the contents from each of the containers and assign scores for different characteristics.

**A-2.1.1** The judges shall consider the following characteristics:

- Colour,
- Taste and flavour, and
- Absence of defects.

## A-2.2 System of Scoring

The variations within each factor are so described that the scores may be ascertained for each factor and expressed numerically. The relative importance of each factor has been expressed numerically on a scale of 100. Each judge shall give a score for the individual

factors, by the method described in Table 2 and record his observations in the Score Sheet.

The scores as number of points given by the judges for the contents of each container for the 3 factors shall be recorded in a tabular form in the score card and the average score calculated for each factor with overall average for each container entered in the appropriate column (*see* Table 2 and A-2.3.2).

## A-2.3 Ascertaining the Score

## A-2.3.1 Agreement Among Judges

To ascertain uniformity of judgement among the judges, the total score assigned by each of them for the contents of the same container shall be calculated by adding up the scores for the various individual characteristics. If the difference between the maximum and the minimum of the total score so obtained does not exceed  $(K + 5)$ , where  $K$  is the number of judges, the scoring shall be deemed as uniform for the container under consideration. If the difference exceeds  $(K + 5)$ , the most outlying score, that is, the one which is farthest from its immediate neighbour (the scores being arranged in one order), shall be discarded and the uniformity among the scores of remaining judges examined.

**A-2.3.2** When the consistency (*see* A-2.3.1) is thus established the overall average scores given by the Judges whose scoring has been found to be consistent, shall be calculated for each container. The average score for each of the individual characteristic shall also be calculated by taking into account the corresponding score as given by the same judge for the contents of the same container.

Table 2 Scoring for Synthetic Syrups

( Clause A-2.2 )

Sl No.	Characteristic	Description	Maximum Number of Points
1	Colour	Good, bright, practically uniform colour; free from discolouration due to oxidation or other causes; changes normally associated due to processing shall not be considered as defects	25
		Good, bright, reasonably uniform colour	20
2	Taste and flavour	Pleasant taste; flavour characteristic of the flavouring material used; free from burnt or any other objectionable odour or off-taste	50
		Pleasant taste; slight flavour (aroma) indicating scorching or burning, but such as not to render the product unacceptable	40
3	Absence of defects	Clear; practically free from haziness, sediment, grit, dirt or other objectionable extraneous material; free from any crystallized sugar. There shall not be present an oily ring at the surface	25
		Reasonably clear; reasonably free from haziness, slight sedimentation; no oily ring present at the surface	20

### SCORE SHEET FOR INDIVIDUAL JUDGE

		Sample No. ....
		Date of Sampling .....
DETAILS OF THE SAMPLE:	a) Product ..... c) Batch No. ....	b) Name of Manufacturer ..... d) Date of Manufacture .....

FACTOR	SCORE POINTS	SAMPLE CONTAINER										
		1	2	3	4	5	6	7	8	9	10	
Colour	20-25											
Taste and flavour	40-50											
Absence of defects	20-25											

Signature of the Judge .....

Date .....

DETAILS OF THE SAMPLE CONTAINER

		Sample No.....
		Date of Sampling.....
DETAILS OF THE SAMPLE: Sample No. .... Date of Sampling. ....	a) Product..... c) Batch No. ....	b) Name of Manufacturer..... d) Date of Manufacture.....

FACTOR	COLOUR					TASTE AND FLAVOUR					ABSENCE OF DEFECTS					TOTAL SCORES					AVERAGE SCORE FOR			
JUDGE CONTAINER NUMBER	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	Colour	Absence of Defects	Taste and Flavour	Total

Remarks.....

Signature: .....

Date: .....





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